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# (12) United States Patent

Hayashi et al.

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## (54) ULTRAVIOLET SENSOR AND METHOD FOR MANUFACTURING THE SAME

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(52) **U.S. Cl.** ...... **257/77**; 257/226; 257/440

See application file for complete search history.

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#### (57) ABSTRACT

An ultraviolet sensor includes a substrate; a diamond layer, placed on the substrate, functioning as a detector; and at least one pair of surface electrodes arranged on the diamond layer. The diamond layer has a detecting region present at the surface thereof, the detecting region has at least one sub-region exposed from the surface electrodes, and the sub-region has a covering layer, made of oxide or fluoride, lying thereon. A method for manufacturing the ultraviolet sensor includes a step of forming a diamond layer, functioning as a detector, on a substrate; a step of forming at least one pair of surface electrodes on the diamond layer; and a step of forming a covering layer, made of oxide or fluoride, on at least one sub-region of a detecting region present at the surface of the diamond layer, the sub-region being exposed from the surface electrodes.

### 3 Claims, 4 Drawing Sheets

